

Cadetia uniflos (F.M.Bailey) M.T.Mathieson, a new combination in Orchidaceae

Michael T. Mathieson

Summary

Mathieson, M.T. (2010). *Cadetia uniflos* (F.M.Bailey) M.T.Mathieson, a new combination in Orchidaceae. *Austrobaileya* **8(2)**: 119–124. *Dendrobium uniflos* F.M.Bailey, originally described in 1884 and subsequently placed in synonymy under *Dendrobium hispidum* F.Muell. var. *taylori* (F.Muell.) F.M.Bailey and, in turn, *Cadetia taylori* (F.Muell.) Schltr., is reinstated here and given a new combination in the genus *Cadetia*. A description is provided for the species; this includes the capsule that was previously unknown. Notes on distribution, habitat and conservation status are also given. A key is provided to the Australian species of *Cadetia* Gaud.

Key Words: Orchidaceae, *Cadetia*, *Cadetia uniflos*, *Dendrobium uniflos*, *Cadetia taylori*, taxonomy, Australia flora, Queensland flora, identification key

M.T.Mathieson, Queensland Herbarium, Department of Environment and Resource Management, Brisbane Botanic Gardens, Mt Coot-tha Road, Toowong 4066, Queensland, Australia. Email: michael.mathieson@derm.qld.gov.au

Introduction

The genus *Cadetia* Gaud. consists of approximately 60 species distributed throughout Australia, New Guinea, Southeast Asia and India (Jones 2006; Govaerts *et al.* 2010). Species now included in *Cadetia* have been previously described in *Dendrobium*; however, there is widespread consensus as to the generic rank of the former (Schlechter 1912; Jones 2006; Govaerts *et al.* 2010). Five species are currently recognised as occurring in Queensland, namely *Cadetia clausa* D.L.Jones & M.A.Clem., *C. collinsii* Lavarack, *C. maideniana* (Schltr.) Schltr., *C. taylori* and *C. wariana* Schltr. (Bostock & Holland 2007; Clements & Jones 2008; P.Bostock *pers. comm.*); the last-mentioned species has been placed in *Sarcocadetia* (Schltr.) M.A.Clem. & D.L.Jones (Clements & Jones 2002), but this appears not to be widely accepted (Govaerts *et al.* 2010).

Dendrobium uniflos F.M.Bailey has not been recognised since Bailey synonymised it under *Dendrobium hispidum* var. *taylori* (Bailey 1902); it was later included in *Cadetia taylori* (Schlechter 1912; Clements & Jones 2008).

Although the type specimen of *Dendrobium uniflos*, determined as *Cadetia taylori* in 1988 by M. Clements, has no flower or capsule, a recent collection of a *Cadetia* from north Queensland has been found to be a significantly better match to the protologue description of this species (Bailey 1884) than to *C. taylori* as defined by the type and description by Mueller (1874). Hence the species is reinstated and given a new combination in *Cadetia*, and is illustrated and compared to related species. The distribution, habitat and conservation status of *Cadetia uniflos* (F.M.Bailey) M.T.Mathieson are discussed.

Materials and methods

The type specimen of *Dendrobium uniflos* and all other *Cadetia* specimens held at the Queensland Herbarium (BRI) were examined. N. Walsh (MEL) provided observations on the type specimen of *Cadetia taylori*, held in the collection of the National Herbarium of Victoria, Royal Botanic Gardens, Melbourne. Field observations of wild plants in the genus were carried out during May 2010. The species description is mainly based on a recent collection (*P.I.Forster PIF36932* & *M.T.Mathieson*) that is a close match to Bailey's original description of *Cadetia uniflos*.

Taxonomy

Cadetia uniflos (F.M.Bailey) M.T.Mathieson **comb. nov.**; *Dendrobium uniflos* F.M.Bailey, *Proc. Roy. Soc. Queensland* 1: 12 (1884). **Type:** Queensland. COOK DISTRICT: Near Herberton (cultivated Brisbane), *ante* 1884, *J.W.R.Stuart s.n.* (holo: BRI [AQ49739]).

Clumping epiphyte or lithophyte. Pseudobulbs erect, 30–60 mm long, 3.5–5.5 mm diameter with shallow longitudinal ribs, loosely covered (to half length) by remains of sheathing bract; single leaf present at apex of each stem, lamina obovate to lanceolate, 30–52 mm long, 3.5–6 mm wide, weakly emarginate, weakly carinate and weakly revolute, shortly attenuate at base. Flowers borne singly from the apex of the stem, 9–11 mm diameter; floral bracts, linear-lanceolate, 7–10 mm long; pedicels *c.* 16 mm long; ovary *c.* 4 mm long, glabrous; petals, linear, slender and incurved, *c.* 6 mm

long when flattened and 0.7 mm wide, white; dorsal sepal narrowly oblong-ovate when flattened, *c.* 6 mm long and 3 mm wide, white; lateral sepals more broadly oblong-ovate when flattened, *c.* 6 mm long, 4–4.5 mm wide, white; column obliquely erect, *c.* 2.5 mm long, 1 mm wide, glabrous; column wings narrow with 2–3 apical projections extending slightly beyond anther; pollinia 4, *c.* 0.5 mm long, oblong, curved, yellow; anther cap white, but can become tinged pink-purple with age and on drying; labellum oblong, 5–6 mm long, *c.* 2.5 mm wide, tri-lobed, orange, lateral lobes triangular, upright, antrorse, orange; mid-lobe cordate, fleshy, strongly recurved, papillate to bullate, sparsely hirsutulous and uniformly coloured bright orange; a small patch of fine, fleshy trichomes *c.* 0.2 mm long at base of mid-lobe; capsule obovoid, elongate, *c.* 17 mm long and 6.5 mm diameter, glabrous; pedicel on mature capsule *c.* 10 mm long. **Fig. 1 & 2.**



Fig. 1. *Cadetia uniflos*, Hann Tableland, May 2010 (*Forster PIF36932 & Mathieson*). Photograph: M.T.Mathieson

Additional specimens examined: COOK DISTRICT: 4.5 km west of Karnak, Jul 1994, *Forster PIF15550*, *Sankowsky & Tucker* (BRI); Hann Tableland National Park, west of Mareeba, May 2010, *Forster PIF36932 & Mathieson* (BRI).

Distribution and habitat: The species is currently known only from three localities from northeast Queensland, spanning c. 120 km north to south; Karnak northwest of Mossman, Hann Tableland near Mareeba and the Herberton area. The type specimen of *Cadetia uniflos* was originally collected from the Herberton district on the western edge of the Atherton Tableland some time prior to 1884 by J.W.R. Stuart and subsequently flowered at the Brisbane Botanic Gardens. An accurate collection location of this specimen is not known.

Habitat data was not given for the type specimen. The two recent specimens cited above were collected from evergreen microphyll moss/fern thicket (Karnak) and ecotone between simple notophyll vine forest and wet sclerophyll forests (Hann Tableland), both on granite, at between 950 and 1100 m altitude.

Notes: The closest putative relative of *Cadetia uniflos* in Australia is *C. taylori*, these being the only two Australian species in the section *Ptero-Cadetia* Schltr. They are very similar, differing primarily in labellum structure and occur over a similar distribution range in the Wet Tropics and adjacent Einasleigh Uplands where suitable habitat exists. A decision to reinstate, with the new combination, *Cadetia uniflos*, was made on the basis of differences in the protologue descriptions of this species and *C. taylori* as follows: the description of the labellum of the type specimen of *C. taylori* (as *Bolbophyllum [sic] taylori*) (Mueller 1874) is "...yellow, kidney-like, semi-orbicular with short stiff hairs above"; recent examination of the type specimen confirms the upper surface of the labellum is prominently covered in trichomes (N.Walsh *pers. comm.* August 2010). Bailey's description of the labellum of the type specimen of *C. uniflos* (as *Dendrobium uniflos*) reads "...surface glandular, texture thick, transversely furrowed, orange coloured" (Bailey 1884). The recent collection from the Hann Tableland, mentioned above, matches

Bailey's protologue of *Cadetia uniflos*, which notably, does not mention a hirsute nature to the labellum but simply describes it as glandular, which is interpreted here as papillate – bullate. The two species have not been observed to co-occur.

Cadetia uniflos can be differentiated from *C. taylori* as follows:

C. uniflos: labellum midlobe densely papillate to bullate, somewhat glandular in appearance in life, extremely sparsely hairy and intensely bright orange, having a small patch of fine, distally eglandular trichomes approximately 0.2 mm long or less near the proximal end of the lobe; anther cap generally white when fresh, often becoming pink-tinged with age and on drying.

C. taylori: labellum midlobe uniformly covered in prominent trichomes, eglandular distally, papillate proximally, pale shades of yellow, orange or pink in colour; anther cap generally pink on fresh flowers but may be white.

Comparative photographs of the two species are shown in **Figures 2 and 3**.

Phenology: Flowering time was not specified in the type description. The Karnak specimen was collected while flowering, in July. Those on the Hann Tableland were found flowering profusely in the wild in early May. Since most plants still had buds and some also had fruit, most of which were ripe at the same time, a flowering period spanning at least late March through to July is likely.

Conservation status: Although this species has been recorded from three widely separated localities, it is likely to be found throughout this area in suitable habitat. This paucity of localities is likely to be a consequence of under representation of orchids in herbaria as populations of various *Cadetia* species in northern Queensland are not infrequent (P.I.Forster, *pers. comm.* August 2010).

No information is available about population status at the type locality, the locality itself being poorly defined, while at the Karnak site it was determined to be common. The population at the Hann

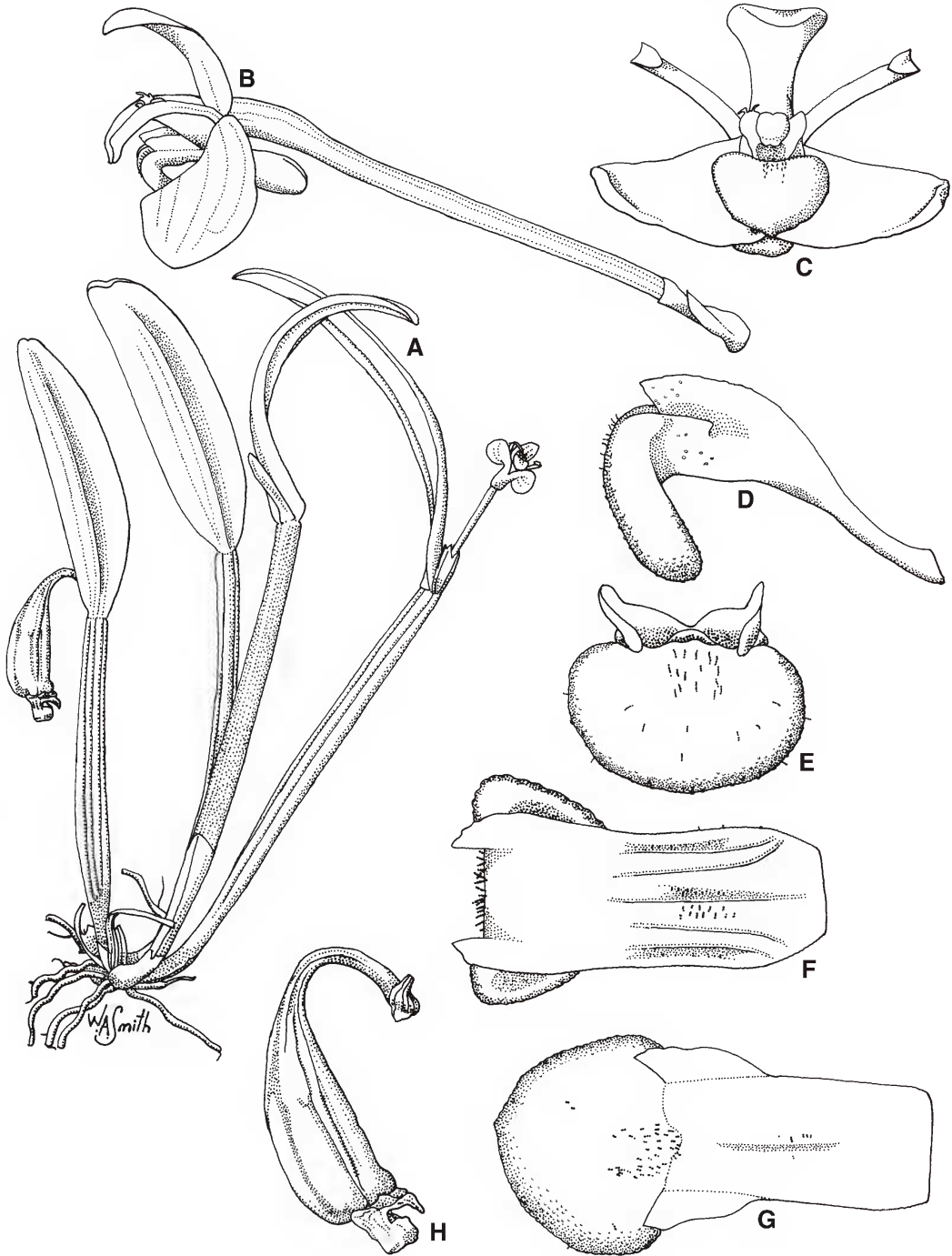


Fig. 2. *Cadetia uniflos*: A. whole plant $\times 1$. B. flower from the side $\times 4$. C. flower from the front $\times 6$. D. labellum from the side $\times 12$. E. labellum from the front $\times 12$. F. labellum from above $\times 12$. G. labellum flattened, from above $\times 12$. H. capsule $\times 2$. All from Forster PIF36932 & Mathieson (BR1), Del. W.Smith.

Tableland site was estimated to be between 200 and 500 plants occupying an area of less than ten hectares. Applying criteria of the IUCN Red List of Threatened Species (IUCN 2010), the conservation status is Vulnerable (D2 based on restricted area of occupancy). As the species can occur on the ecotone between

wet sclerophyll and upland rainforest, fire is a potential threat to the species. Collection of plants by hobbyists has been and remains a real threat at all localities, especially those with good accessibility (e.g. National Park walking tracks).

Key to the Australian species of *Cadetia*

- 1 Plants with creeping rhizome; pseudobulbs, short, fleshy, cylindrical-conical; height:width ratio of mature pseudobulbs generally < 4 **C. wariana**
1. Plants clumping; pseudobulbs, non-fleshy, slender cylindrical or somewhat flattened; height:width ratio of mature pseudobulbs generally > 4 2
- 2 Ovary covered in fleshy tubercles 3
2. Ovary glabrous 5
- 3 Pseudobulbs generally < 20 mm long on mature plants, cylindrical **C. collinsii**
3. Pseudobulbs generally > 40 mm long on mature plants, flattened, widening at apex 4
- 4 Labellum distinctly lobed; lateral lobes broad, blunt; capsules obovoid, c. 5 mm long × 4 mm diameter **C. clausa**
4. Labellum barely lobed, lateral lobes vestigial, pointed (toothlike); capsules obovoid, c. 8 mm long × 7 mm diameter **C. maideniana**
- 5 Upper surface of labellum midlobe papillate, prominently and largely uniformly covered in trichomes; pale colours of yellow, orange or pink; anther cap generally pink-tinged **C. taylori**
5. Upper surface of labellum midlobe papillate to bullate, very sparsely hairy except for a small patch of trichomes at the base; bright orange; anther cap generally white **C. uniflos**

Acknowledgements

Collections and observations were made on a Bush Blitz nature discovery expedition funded by the Federal Government in part. Figure 1 was drawn by Will Smith (BRI). Paul Forster and Peter Bostock kindly commented on a draft of this document. Staff at MEL (David Cantrill, Pina Milne & Neville Walsh) are thanked for their assistance regarding access to and description of the type specimen of *Cadetia taylori*.

References

- BAILEY, F.M. (1884). Contributions to the Queensland Flora. *Proceedings of the Royal Society of Queensland* 1: 8–19.
- BAILEY, F.M. (1902). *The Queensland Flora*, Vol. 5: 1532. H.J.Diddams & Co: Brisbane.
- BOSTOCK, P.D. & HOLLAND, A.E. (eds.) (2007). *Census of the Queensland Flora 2007*. Queensland Herbarium, Environmental Protection Agency: Brisbane.
- CLEMENTS, M.A. & JONES, D.L. (2002). Nomenclatural changes in the *Dendrobieae* (Orchidaceae) 1: The Australasian region. *The Orchadian* 13(11): 485–497.



Fig. 3. *Cadetia taylori*, Hann Tableland, May 2010 (*Mathieson MTM827 & Forster*). Photograph: M.T.Mathieson

CLEMENTS, M. & JONES, D.L. (2008). *Australian Orchid Name Index (13/6/2008)*. Centre for Plant Biodiversity Research, Australian National Botanic Gardens, Canberra. Published on the Internet: <<http://www.anbg.gov.au/cpbr/cd-keys/orchidkey/Aust-Orch-Name-Index-08-06-13.pdf>>, accessed 19 July 2010.

GOVAERTS, R., PFAHL, J., CAMPACCI, M.A., HOLLAND BAPTISTA, D., TIGGES, H., SHAW, J., CRIBB, P., GEORGE, A., KREUZ, K. & WOOD, J. (2010). *World Checklist of Orchidaceae*. The Board of Trustees of the Royal Botanic Gardens, Kew. Published on the Internet: <<http://www.kew.org/wcsp/>>, accessed 19 July 2010.

IUCN (2010). *IUCN Red List of Threatened Species. Version 2010.2*. <<http://www.iucnredlist.org>> . Downloaded on 29 June 2010.

JONES, D.L. (2006). *A complete guide to the native orchids of Australia, including the island territories*. Reed New Holland: Frenchs Forest, N.S.W.

MUELLER, F. (1874). *Fragmenta Phytographiae Australiae* 8: 150–151. Government Printer: Melbourne

SCHLECHTER, R. (1912). Die Orchidaceen von Deutsch-Neu-Guinea. *Repertorium Specierum Novarum Regni Vegetabilis, Beihefte* 1: 401–560.